Before the

Federal Communications Commission

Washington, D.C., 20554

In the matter of	)	
	)	
E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	WC Docket No. 05-196
	)	
Framework for Next-Generation 911 Deployment	)	PS Docket No. 10-255
	)	
	)	

NOTICE OF INQUIRY

REPLY COMMENTS OF FRANCOIS D. MENARD

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INTRODUCTION

1.   The following comments in the present proceedings have been authored by myself, Francois D. Menard, a Canadian citizen which, for the period of 2005 to 2010, has been consulting to several Canadian Internet Service Providers on matters pertaining to issues relating to the Canadian telecommunications regulatory framework and more specifically, issues surrounding nomadic VoIP E911 issues.

2.   During the period of 2006 to 2010, I have contributed several documents to the Emergency Services Working Group of the Canadian telecommunication regulator, the CRTC. I have also authored several submissions in the many proceedings held by the CRTC, with topics similar to those raised in PS Dockets No. 07-114 & 10-255 as well as WC Docket No. 05-196 of the FCC.

3. Through these efforts spanning over a period of several years, I have become expert in the matters surrounding the applicability of the current generation basic and enhanced 9-1-1 systems to the various forms of packetized voice services provided over the Internet and over private networks, capable of interconnection with the public switched telephone network (PSTN). I have proposed credible and exhaustive solutions to the issues of nomadic VoIP E911.

4. In a recent decision, Telecom Decision 2011-721. The CRTC has ordered Canadian Voice over Service Providers in Canada, to implement no later than March 8, 2011, portals, in which end-users will be able to update their current location for nomadic VoIP E911.

5. Although not very explicit in its decision as to other justifications than the small size of the nomadic VoIP market, as a reason for reaching its conclusion, the CRTC was undoubtedly forced to reach these conclusions as a result of the lack of consensus in the Canadian industry towards the need for E911 solutions for nomadic VoIP.

6. Furthermore, Canadian PSAPs failed to ensure a proper balance between their interests combined with those of the ILECs, as managers of the 9-1-1 systems on their behalf, and the conflicting interests of nomadic VoIP service providers, including CLECs & ISPs. Cable Carriers whom do not offer nomadic VoIP services as a primary line service basis took a clear stand in favor of the status quo. Since their depiction of VoIP as a justification for forbearance of local telephone services, most ILECs in Canada have exited the nomadic VoIP residential market. This has provided an opportunity for the CRTC to remain very shy of other arguments than that of a problem not worth solving until a consensus emerges that nomadic VoIP next-generation 9-1-1 is actually a problem worth solving for the PSAPs.

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[1] http://www.crtc.gc.ca/eng/archive/2011/2011-72.pdf

7. This explains why the CRTC has not been put in the position to take position on its assessment of the merits of the Reduced Canadian i2 proposal brought forward by the undersigned. This architecture for nomadic VoIP enhanced 9-1-1 would rely on the mandatory implementation of wiremap update protocols in Internet-enabled routers, analog terminal adapters and IP Phones, such that the location could be transported end-to-end over the NENA i2/i3 V0 interface.

8. The possibility that ISPs could derive a competitive advantage from the unbundling of the wiremap update protocol of the DSL and DOCSIS wholesale infrastructures of the incumbent LECs and MSOs, was seen as a major reason for dismissing the Reduced Ci2 proposal brought forward by the undersigned. However, unless the service definitions of the wholesale DSL and DOCSIS services are re-worked to include the unbundling of a wiremap update disclosure function, there will be no architecture that will support end-to-end location conveyance.

9. The motivation for submitting the present comments is philanthropic in nature, which means it is not in support of a particular outcome from which I would derive direct financial benefits. Setting aside the development of specific funding mechanisms in support of investments in next-generation 9-1-1, the most important unfinished business lies in the mandatory implementation of wiremap updates protocols, as insofar as the rest of the architecture for next-generation 9-1-1 us concerned, it has been finalized many years ago with de development of the NENA i3 specification. NENA i3 does not prescribe the wiremap update protocols that should be deployed.

WIRE MAP UPDATE PROTOCOLS

10.   On ATM-based DSL wholesale networks, the TR-101 specification of the Broadband
        Forum provides the underlying wiremap update functionality, which most LECs
        utilize to engage in throttling of peer-to-peer traffic. The PPPoE intermediate agent
        functionality specified in the Broadband Forum TR-101 specification can be
        unbundled and can carry a unique identifier which can be mapped to a CO/DSLAM
        Shelf/Slot/Port and thus ultimately to a dry loop.

11.   On Ethernet-based access networks such as DOCSIS, Metro Ethernet Forum, WiMAX,
        GPON & EPON, Option 82 of the dynamic host configuration protocol make it
        possible to correlate an IP address to a MAC address. In Canada, the cable industry
        agreed to use Reverse DNS as a protocol for querying an IP address and obtain in
        return a MAC address as a unique identifier which could be bound to a location.

12.   In the end, it should be possible for any IP device, upon seeking to obtain an IP
        address, to be also pushed along with the IP address, a payload of data containing
        the CIVC address assigned by the service provider to the underlying circuit, that is
        recognized by the PSAP as actually being 'dispatche-able', i.e. 'MSAG-validated',
        which means that the address is valid and can safely be communicated to
        emergency crews that are supposed to know where to go when being provided with
        such address.

13.   The standards for access network to push these addresses are specified in the DHCP
        location conveyance standards developed by the IETF and will work well over
        Ethernet access networks. Ultimately, it beholds upon access service providers to
        disclose the open protocols which would be employed by their network technology
        to permit an IP device to download a location object and store it its memory until
        such time as needed upon making a 9-1-1 call. Then, the IP device (router, cable
        modem EMTA, Wi-Fi access point, ATA, IP Phone, ONU, etc.) would push upstream

the it had memorized via a protocol such as SIP-CORE LOCATION CONVEYANCE which is also developed by the IETF.

14.   The PSAP upon receiving a SIP LOCATION CONVEYANCE message end-to-end, along with a location object coming from the access service provider, could be given the possibility of assessing if one location object is more precise than another and thus improve the possibility of a better dispatch.

CURRENT RULES IN CANADA

15.   In Canada, the current rules are such that:

a. there are no distinction between interconnected VoIP and non-interconnected VoIP service providers.

b. as condition of license, LECs and CLECs are required to require by contract with their resellers, which include VoIP service providers, that any service which provides bidirectional PSTN access, to also make it possible to obtain basic 9-1-1 service

c. LECs are required by tariff to offer a zero-dialled-emergency-call-routing-service (0-ECRS), which essentially makes it possible for a privately contracted 9-1-1 call taking service, to get to any PSAP via an undisclosed PSTN number with an IVR which can transfer the calls to any PSAP through the lines of the same 9-1-1 tandems that ILECs use to deliver calls onto PSAPs. The cost of this service is recovered from the existing regulated rates for 9-1-1 service.

d. Although the ILECs have sough the elimination of the 0-ECRS service since 2005, the service remains to this date the only mechanism available to Canadian VoIP service providers to offer 9-1-1 services over nomadic VoIP.

e. Tariffs exist from Bell Canada and Telus for their 0-ECRS service and public references to these services can be found on the tariff web sites of Bell Canada and Telus.

f. DSL wholesale and Cable Modem wholesale is still offered un an unbundled basis at tariffed rates in Canada.

16. There are currently no obligation for Canadian service providers to offer enhanced-9-1-1 whereas the only service service provided is nomadic VoIP. Currently, in Canada, CLECs whom only provide nomadic VoIP services, are not required to offer enhanced-9-1-1. Provided that Canadian nomadic VoIP CLECs contract with a provide 9-1-1 call taking service which itself subscribes to the 0-ECRS tariff of the ILECs, such VoIP CLECs are not required to seek interconnection with the 9-1-1 tandems of the ILECs through direct connection trunks.

17. On June 17, 2010, in Telecom Decision 2010-387[2], the CRTC denied a request of the Canadian ILECs, which proposed to implement an interim solution to NENA i3, proprietary to Bell Canada and possibly the subject of certain Bell Canada patents, coined Canadian i2. Bell Canada appealed the decision before the CRTC and its appeal was recently denied by way of Telecom Decision 2011-72[3].

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[2] http://www.crtc.gc.ca/eng/archive/2010/2010-387.htm
[3] http://www.crtc.gc.ca/eng/archive/2011/2011-72.pdf

RELEVANT MATTERS ON THE CANADIAN PUBLIC RECORD

18.   The public record leading up to these decisions can be accessed in CRTC files:

   a. 2009-04-15 - #: 8663-C12-200905995[4] - Notice of Consultation 2009-194 - Call for comments - Nomadic VoIP E9-1-1
   b. 2007-12-07 - #: 8663-C12-200717738[5] - Decision 2007-125 - CRTC Interconnection Steering Committee - Non consensus report on a functional architecture for the implementation of nomadic VoIP E9-1-1 service in Canada.

19.   Comments of the undersigned were submitted under the banner of the Coalition of Internet Service Providers.

20.   As far back as July 8th 2008, CISP contributed the following at paragraph 61 of its comments[6]:

> *61. The simplicity of deployment of DHCP location conveyance (DHCPLOC) and SIP LOCATION CONVEYANCE IETF industry standards, along with firmware upgrades, will organically evolve to be the only pragmatic, socially responsible (robust & permanent) and financially attainable solution for Voice over IP Service Providers in Canada. CISP supports the implementation of this solution. CISP submits that strong possibility that a permanent solution be attainable faster than the implementation of an patch set to be obsolete even before it becomes the subject of a new non‑consensus report, should motivate the full attention of the Commission.*

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[4] http://www.crtc.gc.ca/PartVII/eng/2009/8663/c12_200905995.htm
[5] http://www.crtc.gc.ca/PartVII/eng/2007/8663/c12_200717738.htm
[6] http://www.crtc.gc.ca/public/partvii/2007/8663/c12_200717738/925186.pdf

RECENT CRTC DECISIONS

21.   Rather than force the industry to hash these quarrels, the CRTC simply yielded to
        the reality that the user base for nomadic VoIP services was measured to be 0.4
        percent of all 9-1-1 subscribers and 2 percent of high-speed Internet subscribers
        and thus not a sufficiently large problem to justify the tens of millions that it would
        cost to implement the Canadian i2 ILEC proposed system and thus the efforts of
        directing the industry to agree on the protocols for wiremap updates and for
        database query.

22.   Contrary to the US, in Canada, PSAPs and ILECs as the entities running the 9-1-1
        systems on behalf of PSAPs, to this date, stood together, hailing the dangers of any
        deliberate decision of the CRTC that would grant any permission to end-users to
        become trusted entities at updating their locations. The idea that end-users be
        permitted to update their locations online is to ensure that should a basic 9-1-1 call
        be made, emergency can be dispatched to the last known address on record
        associated with the telephone number, should end-users seeking emergency
        assistance not be able to speak their current location over the phone.

23.   By way of Telecom Decision 2010-387 & Telecom Decision 2011-72, the CRTC
        forced the hands of the PSAPs and of the ILECs as it has now ordered that by March
        8, 2011, VoIP service providers make portals available for end-users to update their
        location. The CRTC was essentially forced to reach these conclusions based on what
        clearly emerges as a lack of motivation of the PSAP community in Canada in seeing
        through the implementation of next-generation 9-1-1. To this date, the PSAP
        community in Canada has not formally requested public funding to seek the
        implementation of next-generation 9-1-1 at the national level. The CRTC concluded
        that delays in implementing next-generation 9-1-1 justified improving the existing
        system in the interim, essentially replicating the system already employed in the

USA for several years already and which the PSAPs and ILECs in Canada vehemently opposed.

24.   We are thus finding ourselves 5 years later with little to no progress over what was achieved in 2007. From a technology standpoint, the protocols have not changed that much since 2007.

COST ASSESSMENT OF THE Ci2 ILEC PROPOSAL IN CANADA REJECTED BY THE CRTC BY THE RECENT CRTC DECISIONS

25.   Under the ILEC-sponsored Ci2 approach, every ISP and VoIP service Providers would have been required to implement databases which when queried, would make it possible to correlate the public IP addressed used by an Internet subscriber and its physical location. The ISP community and the Cable Carriers did not agree with the interim Ci2 architecture advanced by the ILECs, nor the cost structure of the interim solution proposed by the Canadian ILECs.

26.   Instead the CRTC requested the Canadian industry to monitor the evolution of the next-generation 9-1-1 standards, and did not proceed with mandating the deployment of the Canadian i2 proposal as put forward by the Canadian ILECs.

27.   One of the reasons so much information made it to the public record in 2007 in Canada on the topic concerned by the present proceeding, has to do with the fact that the existing mandatory wholesale regime for DSL and DOCSIS created the rationale for public interactions between LECs, MSOs and their wholesale ISP customers and Voice over IP Service Providers.

28.   At a technical level, the Canadian i2 architecture proposed by the ILECs relied on the correlation of public IP addresses assigned by the IP Control Protocol within Point-to-Point Protocol over Ethernet Session over Digital Subscriber Line aggregation platforms unique session identifiers. In the solution put forward by the ILECs, their

end-users (or end-users of wholesale ISPs) PPP sessions would have been correlated to a physical DSLAM line card Central Office/shelf/slot/port/ associated with a civic address. ILECs would thus have been granted the ability to inspect RADIUS accounting messages between their Broadband Remote Access Servers (BRAS) and the Layer Two Tunneling Protocol (L2TP) access concentrators of Internet Service providers. At mid-course of the proceedings the ILECs changed their position against them operating a centralized Location Information Servers on behalf of all of their wholesale customers. Although the protocol HELD was proposed to be mandated as the querying protocol between the databases operated by the ISPs and the 9-1-1 platform of the ILECs, the ILECs never ended-up identifying the nature of the wiremap update protocol what would be used between their DSLAMs and their BRAS although the PPPoE intermediate agent (TR-101 standard the Broadband Forum).

29.   Efforts made by the ISPs to seek the unbundling of that functionality in support of end-to-end location location conveyance over the V6 interface were opposed by the ILECs citing that their 'updated proposal' was now a centralized LIS and that they did not need to unbundle a wiremap update protocol, despite the fact that the ILECs were rolling TR-101 as such a mechanism for traffic shaping and could evidently readily unbundle it to enable end-to-end location conveyance. By not exposing a wiremap update protocol, ILECs can make their network opaque to the scrutiny of ISPs.

30.   On the Cable Carrier DOCSIS front, the wiremap update protocol proposed was Realtime Reverse DNS whereby a DNS server operated by the cable carriers could always make it possible to correlate an IP address to a MAC address and therefore an end-user's civic address. In the end, the Cable Carriers identified that they could reduce the delays between their DHCP Logs and the database down to a 15 minute interval and raised the doubt that this might not be sufficiently realtime to be suitable for E-9-1-1. The Cable Carriers used this lack of 'realtimeness' to Reverse DNS to favor their status quo position.

31.   The comments of CISP on the public record, particularly the final reply comments dated November 20, 2009[7], are of particular relevance and interest as they provide some meaningful costs assessments of the ILEC Ci2 proposed solution rejected by the CRTC and to support the Reduced Ci2 architecture advanced by the undersigned. They are reproduced below:

> *1.   CISP has recently found a document , labeled proprietary and confidential and posted to the Commission web site dated August 6th 2009, authored by Andrew Solutions.*
>
> *2.   In this document, the author provides at the bottom of page 16, a description of the environments that ISPs should expect to have to live with, should the Commission mandate the implementation of Ci2:*
>
>> *The BP-LIS (Broadband Provider Location Information Server owned by the ILEC or Cable Carrier) is queried by an ISP Location Information Server using the HELD protocol and supports a range of HELD identity extensions and measurement types to assist with location determination. Connectivity to the BP‐LIS can be performed over TLS or VPN tunnel and both HELD over HTTP and HELD over BEEP are supported. (clarification added by CISP)*
>
> *3.   As can be seen from the aforementioned language, the assessment of the costs of implementation of such a highly-available system capable of a multitude of identity extensions, measurement protocols and non-standard interfaces (HELD over HTTP, BEEP) functionality, is an undertaking out of the reach of small ISPs.*

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[7] http://www.crtc.gc.ca/public/partvii/2009/8663/c12_200905995/1324728.zip

4.   In the same document, at page 17, the author then proceeds to identify that the costs to implement the proposed Andrew LIS for a network of one million residential addresses would be roughly $10M.

5.   In its submission dated October 30th 2009 in TNC 2009-261, CISP noted with the help of disclosures made in that proceeding by Bell Canada on October 16th 2009 in the attachment to the answer to (CRTC)17Jul09-1, that the Bell Canada, Bell Aliant Central, Bell Aliant Maritimes and Telebec networks contained 7,701,716 broadband capable lines spread across 1419 broadband capable central offices.

6.   Based on the above submission of Andrew Solutions, the costs of Bell/Aliant/Telebec to implement the Andrew GeoLENs BP-LIS solution, would therefore be on the order of $77M. CISP is therefore relying on this value as the Commission has not released the LDP Phase II costs on the public record.

7.   On April 30th 2008 , Bell Canada/Bell Aliant Central and Bell Aliant Maritimes presented a total PWAC of $15,591,819 for Hosted-LIS Ci2 exempted of the LDP costs. These costs are to be recovered across 1,455,469,265 units of demand spread over 72 months (i.e. presumably 17.3 million E9-1-1 subs). CISP notes that on June 6th 2008 , Bell Canada and Bell Aliant subsequently lowered their total PWAC by nothing short of over $2,28M, down to $13,309,652 to remove costs identified by Bell Aliant Maritimes as related to maintaining the accuracy of ASP high-speed customer records with no further explanation. The costs of Telebec are not yet known.

8.   By simple arithmetic, the total costs of Ci2, for Bell Canada/Aliant/Telebec alone, represent a PWAC of $77M+$13M = $90M.

9.   By comparison, the replacement of the LYA estimate of 10,000 nomadic VoIP devices currently in use with new ones capable of location awareness, even at any cost, would be substantially lower than the PWAC of Ci2.

IT IS NOT TOO LATE TO LOOK AT THE REDUCED Ci2 PROPOSAL OF CISP

10.   CISP members have proposed to the Commission a two-stage process to provide a solution to VoIP E-9-1-1, which CISP has entitled Reduced Ci2.

11.   Reduced Ci2, keeps the good part of the ILEC Ci2 infrastructure, which is in line with the NENA next-generation 9-1-1, i.e. the installation of call steering servers with a Session Initiation Protocol interface.

12.   Reduced Ci2 does away with the remainder of the architecture, which has been patented by Bell Canada. This portion of Ci2 is cost prohibitive and raises fundamental potential privacy violation and security concerns . Hence the moniker Reduced, i.e. Ci2 "Light".

13.   CISP submits that its Reduced Ci2 proposal, may have been unfortunately ignored by the Commission and now warrants immediate further investigation.

14.   Reduced Ci2 proposes a solution to nomadic VoIP E-9-1-1 which does not make use of Bell Canada intellectual property and which will guarantee the preservation of the private life of Canadians as they seek emergency services over the Internet.

15.   Reduced Ci2 requires the making Internet service provider accountable to expose technical means in their network architectures to allow location aware devices to acquire location. CISP believes that the Commission should impose upon ISPs to implement this functionality across the country.

16.   Solutions to download location, to location aware devices exist today via the DHCP protocol (Option 99 and 123). For instance the ECRITDHCP open source project is known to provide LOCATION download functionality to the ZAP open source SIP client. The source code of both projects can be downloaded from http://ecrit.labs.nic.at/ .

17.   Reduced Ci2 also places an emphasis on the part of the incumbent local exchange and cable carriers to enable the wholesale interface of their services to exchange unique identifiers, which ISPs would be able to associate with civic addresses in their provisioning servers. ISPs fundamentally believe that location should be downloaded to a location aware devices well in advance of any emergency call potentially being made, such as that the location does not have to potentially fail to resolve during an emergency call, sending the problem back to square one, i.e. a basic 9-1-1 call.

18.   CISP has identified a number of such unique identifiers, and so have the ILECs and Cable Carriers throughout various recent proceedings before the Commission. CISP has attempted to focus the attention of the Commission onto such functionality being a requirement for the implementation of ADSL-CO and local head-end services in TNC 2009-61.

19.   CISP has further used the analogy current DSL wholesale (and TPIA without Reverse DNS) to be tantamount to ISPs being forced to drink from a firehose, without any capability to trace where the water droplets ultimately originate from. ISPs require visibility into the access network architecture for purposes of billing, network troubleshooting and various other network management purposes.

REDUCED Ci2 for TPIA (CABLE MODEM MANDATORY WHOLESALE)

20.   CISP notes that it has been the deliberate decision on the part of the ILECs to revoke access to such functionality to ISPs for reasons, which to this date remain unknown.

21.   CISP further notes that ISPs explicitly required the implementation of Reverse-DNS with TPIA in order to resolve a similar matter and that the Commission mandated Cable Carriers to implement Reverse DNS in Decision 2007-1 , approving the NTRE038D report of the CRTC Interconnection Steering Committee - Network Working Group - Implementation of IP address tracking in DOCSIS networks (TIF18), 17 October 2006 (NTRE038D). This report identifies a mechanism, which allows Internet service providers using third-party Internet access provided by cable carriers, to track the Internet Protocol address used by their customers.

22.   In this proceeding, CISP has attempted to seek the identification of the costs to make TPIA Reverse DNS near real-time such as to allow this functionality to be relied upon by the ISPs for purposes of Nomadic E-9-1-1.

23.   CISP submits that with respect to TPIA, making Reverse DNS near real-time represent costs which are relatively minute.

24.   CISP further submits that with respect to the requirement that ISPs implement Location Determination Platforms, with regards to TPIA, such platforms simply require interfacing a DNS server to the same provisioning database as a DHCP server capable of offering location via DHCP Option 99 and 123. Finally, CISP notes that with respect to TPIA, location aware VoIP devices could issue a DHCP RENEW and grab a location record and store it in memory. Finally, upon dialing 9-1-1, the location aware VoIP device would send the location record to the SIP PROXY of the VoIP service provider, which would

route it to the Reduced Ci2 call steering server (of the ILEC in its Emergency Service Provider capacity), which would then route the call to the proper PSAP. This will work and will be inexpensive to implement.

25.   CISP members have therefore identified that they did not need to develop sophisticated cost studies to identify the costs of implementing location determination platforms given the simplicity and the obviousness of the available solutions. CISP members commit to implement LDPs in the manner described above for TPIA as a cost of doing business.

REDUCED Ci2 for DSL

26.   CISP submits that where there is a will, there is a way. Such applies to DSL wholesale in its current aggregated form, as ILECs can TODAY expose through RADIUS accounting, the exact same originating DSLAM port information (or Working Telephone Number) which ILECs feed into their devices which are responsible for enforcing their technical Internet Traffic Management Practices (ITMPs). CISP has identified on the record of the ITMP proceeding, in this proceeding, as well as in TNC 2009-261, that the ILECs have the capability to pass the unique identifier associated with a given location civic address, or even pass through the working telephone number of the circuit, at the time of a PPPoE authentication request.

27.   CISP notes that to this date, the Commission has chosen not to scrutinize any capability on the part of the ILECs to modify their aggregated DSL wholesale network-to-network interface for purposes of exposing location.

28.   CISP submits that the existing functionality required for ISPs to make use of the circuit identifiers, which are TODAY being provided to ISPs over RADIUS, for purposes of ISPs implementing their own LDPs. There is therefore no need for the ILECs to be compensated by any other subscribers, then the

ones of their unregulated retail services, for the costs to implement Ci2 in the manner, which they currently propose.

*29.	CISP believes that the only portion of Ci2 which ILECs should be able to recover from a broader user base then the one of their unregulated retail services, is the one related to the implementation costs of Reduced Ci2. Thos costs are mainly that of the call steering servers and the interconnection of PSAPs over the ILEC RCi2 network.*

*30.	CISP stresses that ISPs should not be forced to lease an ILEC LDP service which may be forced upon them as part of subscribing to a service such as Bell Canada GT5410 (GAS), when the required unique circuit identifier exchange functionality already exists and the issue is just a matter of being provided consistent and proper documentation about the format of these identifiers.*

*31.	CISP further notes that in the ADSL-CO proceeding, explicit architectural references have been made by CISP to use of the Broadband Forum TR-101 standard as a mean of conveying unique identifiers across the network-to-network interface of the ADSL-CO service. CISP has noted that the growth technology employed by Bell Canada fully supports this standard and that the issue is simply one of developing the service rather than the development of a technology. CISP insists that the Commission requires the ILECs to provide detailed evidence supporting any claim that the CISP proposed solution would not work before simply ignoring it.*

*33.	CISP finally wishes to note that as of November 20th 2009, SIPCORE LOCATION CONVEYANCE is expected to become a final standard approved by the IETF within 3 months and is the only standardized mean of conveying location in conformance with the NENA Next-Generation 9-1-1 standard.*

34.   CISP notes that during this proceeding and during the prior proceeding, the ILECs have continued to either ignore or ridicule the CISP proposed solution. However, this doesn't change the fact that the CISP Reduced Ci2 proposal, when combined with small improvements to current higher-speed access unbundled services and location-aware devices, will work immediately and will be cost effective. CISP further notes that future ADSL-CO and Local-head-end services, as defined in TNC 2009-261, will be designed to allow ISPs to implement their own location determination platforms.

35.   CISP is concerned that the ILEC and Cable Carriers have ignored the CISP proposal, in order to serve their specific interests, rather than the one of Canadians, which may seek the opportunity to make emergency calls over a nomadic VoIP service.

36.   CISP is further concerned that incumbent carriers be subsidized to the tune of $90M for Bell Canada/Aliant/Telebec to implement a solution which may only be of relevance to 10,000 nomadic VoIP users at this time. CISP fears that the rates of wholesale services to ISPs who use DSL wholesale or TPIA will go up, as ISPs will be forced to subscribe to the ILEC and Cable Carrier proprietary LDPs rather than to have the underlying information which would allow ISPs to run their own LDPs.

37.   CISP members are not asking for any money from the Commission. It will implement Reduced Ci2 as a cost of doing business for as long as the incumbents agree to provide unique identifiers across the network-to-network interfaces of their wholesale services.

38.   CISP proposes that the Commission sets a special fund to replace the costs of nomadic VoIP equipment with location-aware equipment in the same manner as the transition to over-the-air digital television requires the subsidization of ATSC digital tuners.

39.   0-ECRS should remain available throughout this transition and after as a contingency routing option.

40.   However large the market for nomadic VoIP was promised to be, the fact that it was used by the Governor in Council to justifying the deregulation of telephone services, even in the presence of a duopoly, the fact remains that nomadic VoIP, is not going to disappear, however small it has shrunk to.

41.   Several CISP members continue to offer nomadic VoIP services, still today, and fully intend to continue to provide such services. The market for nomadic VoIP will grow and the need for a long-term solution to nomadic VoIP remains.

42.   CISP members have fully engaged themselves in this proceeding to present an alternative solution to Ci2, which CISP entitled Reduced Ci2. CISP has further identified that the cost recovery for such an alternative solution would not require significant subsidies.

43.   CISP submits that location aware devices will cost less than $100. The replacement of 10,000 of them makes this problem on the order of $1M. There is simply no basis to forego, or further delay, the implementing Reduced Ci2 proposal of CISP, which in any event, will be at the basis of the Canadian next-generation E9-1-1 system.

ORIGINAL PROPOSAL OF A COALITION OF CANADIAN ISPs IN 2007: Reduced Ci2

32.   Of relevance to this proceeding, is the submission of CISP for an architecture named Reduced Ci2 dated May 25, 2007, and contributed to the Emergency Services Working Group of the CRTC as ESCO278A[8]. This document is being included in Appendix 1 to the present submission. The Architecture was summarized as part of the final reply comments[9] of CISP dated November 20th 2009, as follows in paragraph 25:

   A.   ILECs implement Stage 0 routing servers capable of steering calls based on SIP LOCATION CONVEYANCE data received across the Ci2 V0 interface

   B.   ILECs are to recover the costs of the Hosted‐LIS service, solely from the subscribers of the Hosted‐LIS service and are not allowed to make subscription to the ILEC Hosted‐LIS service mandatory, as ISPs would be capable of computing their own wiremaps and conveying location to the Ci2 stage 0 routing servers without needing a LIS, either on the ILEC premise, nor on the ISP premise, sparing the possiblility that death may occur due to failure of the LIS to perform in real‐time, for an end‐user incapacitated to communicate its location7.

   C.   ILECs are to support 0‐ECRS, which works, provides an enhanced service experience to the 220,000 VoIP subscribers in Canada, until such time as ISPs and VISPs no longer need the 0‐ECRS service

   D.   ILECs are to augment the radius accounting interface of their aggregated ADSL wholesale services, such as to provide access to a unique identifier which ISPs can associate to a fixed location.

   E.   Cable Carriers are to make their Reverse‐DNS TPIA platforms real‐time.

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[8] http://www.crtc.gc.ca/public/cisc/es/ESCO278A.doc
[9] http://www.crtc.gc.ca/public/partvii/2007/8663/c12_200717738/930101.pdf

F. Canadian Carriers who must provide under tariff, conditional essential/mandated non‑essential facilities, are required to modify the network‑to‑network interface of the element, such as to permit the subscriber to compute its own wiremap.

NEW SOLUTION PROPOSED IN THIS PROCEEDING BASED ON CARRIER ENUM

33. A more recent effort made by the undersigned was to propose use of the LNP database managed for the Canadian industry under contract with Neustar and to build a wiremap update interface to the LNP database as part of a Carrier ENUM implementation for Canadian LECs and CLECs.

34. Under this approach, PSAPs would also be allowed to query the Carrier ENUM registry, and thus be able to perform a NAPTR lookup in realtime and retrieve a digitally signed as 'dispatcheable' PIDF-LO object of the current location associated with a telephone number. This PIDF-LO object could be compared in real-time agains the one being carried end-to-end over the NENA i3 V6 interface such that upon receiving a 9-1-1 call, the PSAP would be put in a position to either disregard the location carried end-to-end in favor of the location contained in the LNP database, or to potentially elect to double dispatch to both locations (i.e. the one in the LNP database and the one carried end-to-end).

35. The key to this new proposed architecture is a public key infrastructure of digitally signed as 'dispatcheable' street address guide (SAG) data which local governments could maintain rather than have the SAG maintained by the ILECs on behalf of the PSAPs. This way, when receiving a location end-to-end, the PSAP could recognized as this PIDF-LO object, although transmitted in clear text, as being already signed as recognized as 'dispatcheable' and would not care as much about the sender of this

information being in a LIS or being retrieved from a Carrier ENUM LNP database. Furthemore, the Carrier ENUM approach could also contain as NAPTR additional information for a telephone number, a multitude of other fields of important data such as the NOC of the service provider, telephone number of the poison center or other specialized emergency services that serve a specific civic address.

36.   An architecture, which protects end-user privacy, is paramount as location should only be revealed upon need of emergency services, and only to those who need to get it. A database tracking end-user IP addresses, along with their location, 'just in case a 9-1-1 call is placed' was a bad idea for Canadians in 2007, which was fortunately rejected by the CRTC, and remains a bad idea, period. Had this idea moved forward, it would have faced challenge before the courts - no doubt about it. Potentially, storing encrypted location information in the NANP LNP database, which could only be decrypted by the PSAPs with the decryption key being distributed end-to-end along with the emergency call, would alleviate any lack of privacy concern.

37.   I would like to thank the FCC for the opportunity to contribute the aforementioned and remain available for any further questions.

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